Detection of Genetically Modified Plant Material—Analytical Methods

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The EPA regulates Plant Incorporated Protectants (PIP) as a class of Genetically Modified Organisms (GMO); specifically, plants that express pesticidal gene products. PIPs include both the pesticidal protein produced by the modified plants and the genetic material necessary for the plant to produce that substance. The EPA regulates both the protein and its genetic material, but the plant itself is not regulated. How can enforcement officials identify genetically modified plants, specifically, PIPs?

Because there are instances where it may be necessary to identify a specific PIP, we need validated detection methods. In the field, a plant that is expressing a pesticidal protein doesn't look any different from its conventional counterpart. Detection methods may target either the protein or DNA that is unique to the PIP plant material. These methods differ in their level of sensitivity, specificity, speed, equipment requirements, and technical difficulty. Some methods are fast and can be performed by a regulator in the field with moderate technical skill and relatively simple equipment. These methods are suitable for screening purposes. For sensitive detection of specific PIPs, more time-consuming procedures must be carried out under controlled laboratory conditions by skilled technicians. Some sophisticated equipment may also be required.

OPP's Microbiology Laboratory validates the detection methods submitted with applications for PIPs in the laboratory before they are accepted for registration purposes. This poster would describe the framework for the laboratory validations and an update on the program.

Illustrations: Consumer looking at corn in market or roadside; scientist looking at two ears of corn; scientists conducting tests; laboratory equipment; visual comparison of GMO corn seeds and conventional corn seeds to emphasize the similarity in appearance